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REMARKS

This amendment is submitted in response to the Examiner's Action dated August 29, 2006. Applicants have amended the claims to more completely recite and/or clarify features of the invention and overcome the claim objections. No new matter has been added, and the amendments place the claims in better condition for allowance. Applicants respectfully request entry of the amendments to the claims. The discussion/arguments provided below reference the claims in their amended form.

IN THE SPECIFICATION

At paragraph 1 of the present Office Action, the disclosure is objected to because of informalities. Accordingly, Applicants have reviewed the disclosure and provided corrections thereto. Applicants respectfully request entry of the amendments to the specification.

CLAIMS OBJECTIONS

In the present Office Action, Claims 8, 10, 16 and 22 are objected to because of informalities. Accordingly, Applicants have amended Claims 8, 10, 16 and 22 to overcome the claim objections. Applicants therefore also request removal of the objections to the claims.

CLAIMS REJECTIONS UNDER 35 U.S.C. § 102

In paragraph 6 of the present Office Action, Claim 22 is rejected under 35 U.S.C. § 102(b) as being anticipated by *Arimilli et al.* (U.S. Patent No. 5,943,684), hereinafter *Arimilli '84*. *Arimilli '84* does not anticipate Applicants' claimed invention because *Arimilli '84* does not teach each feature recited by Applicants' claims.

Applicants first note that the cited reference was written by Applicants, who are also the inventors of the subject patent (i.e., *Arimilli '84).* As such, Applicants are fully aware of what is taught by the reference and can assert with confidence that *Arimilli '84* does not teach several features provided by Applicants' claimed invention, as recited within Claim 22. Among the features not taught by *Arimilli '84*, but recited by Applicants' Claim 22 are the following:

> (1) "said first coherency state indicates that data ... is **solely owned** ... **AND may or may not be overwritten** ..., wherein ... cache is provided sole ownership ... pending an outcome of a speculative write operation ...update the cache line";

(2) "means ... issue a **special address operation** that **requests sole access** to said cache line **and indicates** that the first device **intends to overwrite the cache line** ..."; and
(3) "means for changing ...to said first coherency state ... indicating that **sole ownership** has been granted to said first device" (*emphases added*).

Arimilli '84 does not teach (or suggest) any of the above elements, and particularly the highlighted features within the above claim elements. The cited portions of *Arimilli '84* teach very different cache operations and coherency states. For example, Col. 6, lines 40-43 describe "..cache ... may want to modify its data in a cache line (by zeroing) without first fetching the relevant old data from the system memory" (*underline added for emphasis*). Col. 6, lines 60-66 then defines the "Upstream-Undefined states due to three possible cases" which are (1) the odd sector being modified, (2) the even sector being modified, and (3) neither sectors are modified. Clearly, the Upstream-Undefined state is NOT synonymous with or suggestive of Applicants' first coherency state, which has a very specific definition and associated functionality, as recited by Claim 22.

Arimilli '84 also fails to teach means for requesting or providing sole ownership of a cache line to a particular device via a special address operation. Neither does *Arimilli '84* teach (or suggest) the special address operation and/or the associated functionality of the special address operation.

The standard for a § 102 rejection requires that the reference teach each element recited in the claims set forth within the invention. As clearly outlined above, *Arimilli '84* fails to meet this standard and therefore does not anticipate Applicants' invention. Claim 22 and its dependent Claim 23 are therefore allowable.

CLAIM REJECTIONS UNDER 35 U.S.C. § 103

In the present Office Action, Claims 1-2, 7 and 9-11 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Arimilli '84* and *Arimilli et al.* (U.S. Publication No. 2003/0097529), hereinafter *Arimilli '29*. Further, Claims 6, 8, 12-16, 21 and 23 are rejected under 35 U.S.C. 103 (a) as being unpatentable over *Arimilli '84* and *Arimilli '29* as applied to claims 1-2, 7, 9-11, 20 and 22 above, and further in view of *Chang* (U.S. Publication No. 2003/0115423). Further, Claims 3-5 and 17-19 are rejected under 35 U.S.C. 103(a) as being

unpatentable over *Arimilli '84* and *Arimilli '29* as applied to claims 1-2, 6-16 and 20-23 above, and further in view of *Chaudhry et al.* (U.S. Publication No. 2002/0199063).

Applicants first incorporate herein the above arguments addressing the limitations of *Arimilli '84*, with respect to those features -- (1) and (2) above-- of Applicants' Claim 22, which are also recited within Applicants' independent Claims 1 and 11. Specifically, Claims 1 and 11 also recite features related to: (a) "a particular address operation, ... **requests sole ownership** ... **and indicates** ...intends to **overwrite the cache line**," and (b) "a first coherency state, which indicates ...**sole ownership** ... AND may or may not overwrite the cache line," and (c) "...said particular address operation further causes ... to **not issue the most coherent copy** ... on the system bus."

Additionally, Claims 1 and 11 provide the following features:

(4) "in response to snooping said address operation, changing a coherency state ...**without sending data** ...to the first cache, wherein a default response ... automatically triggers a return of the cache line ...when the second cache has the most coherent copy ...; wherein **sole ownership** of said cache line is provided ...**without data being sourced** ...from another cache" (*emphasis added*).

None of the above combination of references suggests the above features/elements of Applicants' claimed invention. *Arimilli '29* does not teach or suggest the first three listed elements of Applicants' claims. *Arimilli '29* also does not teach or suggest the above fourth element recited by Applicants' claims. Para. 20 of *Arimilli '29* describes "[w]hen one of several modifications to the cache line in the first processor is snooped, all other processors sharing the cache line changes the coherency state ... to Z1" (*underline added*). There is no suggestion in this section of *Arimilli '29* of the first processor actually issuing a particular address operation or the other processors snooping that particular address operation, and Applicants' "particular address operation" is NOT a modification to the cache line. Rather, as provided by Applicants' claimed invention, the particular address operation is a request for **sole ownership** that invalidates the line in other caches and also prevents the automatic transfer of most coherent data from another cache. These features are carried through to Applicants' dependent claims, which reveal that the second coherency state is in fact the invalid state.

The final lines of para 29 describe a response by the first processor (which is clearly "in" or "transitioning to" the modified state) to a snoop of Z1 reads on the system bus. The first processor "issues a lock to one of the requesting processors" which "receives a 'use new data' (or lock acquired) response and is later given the lock on the **modified** cache line. The cache line is then **acquired** by the selected processor ... DClaim of the cache line on the system bus" (emphases added). With this description, it is very clear that the "first processor" is the processor with "modified data" and that the first processor with modified data does **eventually send the modified data to the selected requesting processor** following a snoop of the first request. The acting devices and sequence of processors described by that paragraph is not suggestive of Applicant's claimed invention, as recited by the independent claims. Neither does the above process suggest the features of Applicant's dependent claims.

None of the other references, namely *Chang* and *Chaudhry*, (either independently or in combination with the above *Arimilli* references) teaches or suggests the various features of Applicants' independent claims presented above. Several dependent claim features are also not suggested by the various combinations of references.

From the above discussion/arguments and the reasons provided therein, Applicants have shown that the combinations of references do not suggest key features of Applicants' independent Claims 1 and 11. One skilled in the art would thus not find Applicants' invention unpatentable over the combination of references. Claims 1 and 11 are therefore allowable over the combinations. Further, the entire set of dependent claims, which depend from independent Claims 1 and 11 (and 22) are also allowable.

CONCLUSION

Applicants have diligently responded to the Office Action by amending the specification to overcome objections thereto and by amending the claims to more clearly and completely recite the features of the invention and overcome claim objections. Applicants have also provided discussion/arguments which show why Applicants' claims are not anticipated by or obvious in light of the references and combinations thereof. Since the amendments and arguments overcome the claim objections and §§ 102 and 103 rejections, Applicants, respectfully request issuance of a Notice of Allowance for all claims now pending.

Applicants further respectfully requests the Examiner contact the undersigned attorney of record at 512.343.6116 if such would further or expedite the prosecution of the present Application.

Respectfully submitted,

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